Antimicrobial resistance among human non-typhoidal *Salmonella*: A comparison between Enter-net in Europe and NARMS in the United States

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Background: Antimicrobial resistance, including multidrug resistance, contributes to the human health burden of *Salmonella* and may compromise the efficacy of available treatment options. In past decades, multidrug-resistant phenotypes of non-typhoidal *Salmonella* have disseminated in Europe and the United States. Efforts to mitigate dissemination of multidrug-resistant strains are enhanced by international collaborations.

Methods: In 2000, antimicrobial susceptibility results for human non-typhoidal *Salmonella* isolates were submitted from 10 European countries (pop. 280 million) to Enter-net. In 2000, isolates of human non-typhoidal *Salmonella* were submitted from 15 states in the United States (pop. 108 million) to the National Antimicrobial Resistance Monitoring System (NARMS). Results for Enter-net and NARMS were compared.

Results: Enter-net received results from 27,059 isolates of human non-typhoidal *Salmonella*; NARMS received and tested 1,367 human non-typhoidal *Salmonella* isolates. Higher proportions of sulfonamide (30% vs. 17%), tetracycline (26% vs. 19%), and nalidixic acid (14% vs. 2%) resistance were observed in Enter-net than in NARMS; a higher proportion of NARMS isolates (3%) were resistant to a 3rd-generation cephalosporin (ceftiofur) than Enter-net isolates (0.6% - cefotaxime). The proportion of isolates that were fluoroquinolone-resistant was similar in both systems, 0.5% in Enter-net and 0.4% in NARMS. *S.* Typhimurium comprised 25% of the Enter-net and 22% of the NARMS collection. A higher proportion of *S.* Typhimurium isolates were R-type ACSSuT in Enter-net (50%) than in NARMS (28%). *S.* Newport comprised 1% of the Enter-net and 9% of the NARMS collection. A higher proportion of *S.* Newport isolates were R-type ACSSuT in NARMS (23%) than Enter-net (5%).

Conclusion: Resistance to clinically important antimicrobials among human non-typhoidal *Salmonella* is common in both Europe and the United States. Substantial differences exist in the patterns of specific resistances between the two regions. Understanding the emergence and dissemination of antimicrobial-resistant *Salmonella* is strengthened by international collaborations.